

Safety

# **System Safety Engineering and Management**

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# **SUMMARY of CHANGE**

AR 385-16  
System Safety Engineering and Management

AR 385-16 is changed as follows:

- o The title page history, applicability, and distribution paragraphs are superseded.
- o The title page interim change paragraph is rescinded.
- o Paragraph 4a is superseded.
- o Paragraph 4a(7) is added.
- o Paragraph 4b is added; 1990 paragraph 4b is re-lettered as 4c, and 1990 paragraph 4c is re-lettered as 4d.
- o Paragraph 4d(4) is added.
- o Paragraph 4e is added, and 1990 paragraph 4d is re-lettered as 4f.
- o Paragraph 4f(4) is added.
- o Paragraph 4e is re-lettered as 4g; paragraph 4g(3) is added, and 1990 paragraph 4e(3) is re-lettered as 4f(4).
- o Paragraph 4f is re-lettered as 4h.
- o Paragraph 4g is re-lettered as 4i.
- o Paragraphs 4j, 4k, and 4l are added.
- o Paragraph 4h is re-lettered as 4m, and paragraph 4m(6) is added.
- o Paragraph 4i is re-lettered as 4n, and paragraph 4n(8) is added.
- o Paragraph 4o is added.
- o Paragraph 4j is superseded and re-lettered as paragraph 4p, and paragraph 4p(3) is added.
- o Paragraph 4k is re-lettered as 4q, and paragraph 4q(16) is added.
- o Paragraph 4l through paragraph 4o are re-lettered as paragraph 4r through paragraph 4u.
- o Paragraph 4p is re-lettered as 4v, and paragraphs 4v(6) and 4v(7) are added.
- o Paragraph 4q is re-lettered as paragraph 4w.

- o Paragraph 4r is re-lettered as paragraph 4x, and paragraph 4x(7) is added.
- o Paragraph 4s is re-lettered as paragraph 4y.
- o In paragraph 5k, obsolete AR 715-6 is removed.
- o Paragraphs paragraphs 5r and 5s are added, and 1990 paragraphs 5r, 5s, and 5t are re-lettered as 5t, 5u, and 5v.
- o In appendix A, section I, AR 73-1 supersedes AR 70-10 and AR 71-3.
- o In appendix A, section I, add AR 750-6.
- o In appendix A, section II, AR 70-1, supersedes AR 15-14, AR 70-15, and AR 70-17.
- o In appendix A, section II, AR 95-1 supersedes AR 95-3.
- o In appendix A, section II, AR 140-483 supersedes AR 140-478.
- o In appendix A, section II, obsolete AR 415-20 and obsolete AR 415-25 have been removed.
- o In appendix A, section II, AR 415-15 supersedes AR 415-35.
- o In appendix A, section II, CFR 40 supersedes CFR 260.
- o In appendix A, publication titles have been updated.
- o Throughout the publication, internal and external references have been updated.
- o In the glossary, acronyms have been updated.

## Safety

# System Safety Engineering and Management

**By Order of the Secretary of the Army:**

**ERIC K. SHINSEKI**  
*General, United States Army*  
*Chief of Staff*

Official:



**JOEL B. HUDSON**  
*Administrative Assistant to the*  
*Secretary of the Army*

**History.** This publishes a partial revision. This publication was last revised on 3 May 1990 (superseding AR 385-16, dated 3 September 1985), by order of the Secretary of the Army; authenticated by Carl E. Vuono, General, United States Army, Chief of Staff; Official, Milton H. Hamilton, Administrative Assistant to the Secretary of the Army.

**Summary.** This regulation implements Department of Defense Instruction 5000.36. It updates Army system safety engineering and management policy and reflects realignment of Army Staff safety

responsibilities, reorganization of the research, development, and acquisition process, risk management procedures, and updates terminology.

**Applicability.** This regulation applies to the Active Army; the Army National Guard of the United States, including periods when operating in an Army National Guard capacity; and the U.S. Army Reserve. During mobilization, policies contained in this regulation may be modified by the proponent.

**Proponent and exception authority.** The proponent of this regulation is the Chief of Staff, Army. The Chief of Staff, Army has the authority to approve exceptions to this regulation that are consistent with controlling law and regulation. The proponent may delegate the approval authority, in writing, to a division chief within the proponent agency in the grade of colonel or the civilian equivalent.

**Army management control process.** This regulation is subject to the requirements of AR 11-2. It contains internal control provisions but does not contain checklists for conducting internal control reviews. These checklists are being

developed and will be published at a later date.

**Supplementation.** Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from Chief of Staff (DACS-SF), 200 Army Pentagon, Washington, DC 20310-0200.

**Suggested Improvements.** Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to Chief of Staff (DACS-SF), 200 Army Pentagon, Washington, DC 20310-0200.

**Distribution.** This publication is available in electronic media only and is intended for command levels A, B, C, D, and E for Active Army, Army National Guard of the United States, and United States Army Reserve.

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\*This regulation supersedes AR 385-16, dated 3 May 1990.



## **1. Purpose**

This regulation prescribes policies and procedures, and identifies responsibilities to ensure hazards in Army systems and facilities are identified and the risks associated with these hazards are properly managed. It applies to all Army materiel systems and facilities. It applies during all phases of the life cycle of systems or facilities. The concepts also apply to smaller procurement and acquisition programs such as those at the installation level. Medical-related materiel may require more intensive management, including coordination with other Government agencies.

## **2. References**

Required and related publications are listed in appendix A.

## **3. Explanation of abbreviations and terms**

Abbreviations and special terms used in this regulation are explained in the glossary.

## **4. Responsibilities**

- a.* The Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA (AL&T)) will—
  - (1) Establish Army policy and guidance for materiel research, development, and acquisition which ensure timely and systematic application of system safety.
  - (2) Monitor the compliance with safety and health criteria listed in requirements documents for appropriate systems under research, development, or modification.
  - (3) Review system safety status and issues during each milestone decision review (MDR) of new or improved Army Acquisition Executive (AAE)-managed systems or Office of the Assistant Secretary of the Army (Financial Management) (ASA(FM))-managed systems.
  - (4) Act as risk acceptance authority for risk levels defined by appendix B when delegated the authority by the AAE.
  - (5) Fund safety research programs to address resolution of generic systemic safety problems.
  - (6) Provide formal feedback to the combat developer, materiel developer, and the U.S. Army Safety Center (USASC) on safety risks accepted at Materiel Acquisition Decision Program (MADP) reviews for major programs, designated acquisition programs, and where appropriate, materiel change management (MCM) programs. (See AR 70-1.)
  - (7) Furnish a representative (General Officer/Senior Executive Service level) to serve on the Army Safety Action Team (ASAT).
- b.* The Assistant Secretary of the Army (Installations and Environment) will furnish a representative (General Officer/Senior Executive Service level) to serve on the Army Safety Action Team (ASAT).
- c.* The Director of Information Systems for Command, Control, Communications, and Computers (DISC4) will—
  - (1) Establish Army policy and guidance for information system research, development, and acquisition which ensure timely and systematic application of system safety.
  - (2) Monitor the compliance of safety and health criteria listed in requirements documents for appropriate systems under research, development, or modification.
  - (3) Review system safety status and issues during each MDR of new or improved DISC4-managed systems.
  - (4) Act as risk acceptance authority for risk levels defined by appendix B when delegated the authority by the AAE.
  - (5) Provide formal feedback to the combat developer, materiel developer, and the USASC on safety risks accepted at MADP reviews for major programs, designated acquisition programs, and where appropriate, MCM programs. (See AR 70-1.)
- d.* The Deputy Chief of Staff for Personnel (DCS PER) will—
  - (1) Act as the system safety representative at the Army Systems Acquisition Review Council (ASARC).
  - (2) Provide the Army Staff position on recommendations for risk acceptance of residual hazards as identified in a System Safety Risk Assessment (SSRA).
  - (3) Manage the interface of the Army Human Factors Engineering Program with the Army System Safety Program. (See AR 602-1.)
  - (4) Furnish a representative (General Officer/Senior Executive Service level) to serve on the Army Safety Action Team (ASAT).
- e.* The Deputy Chief of Staff for Programs (DCS PRO) will furnish a representative (General Officer/Senior Executive Service level) to serve on the ASAT.
- f.* The Deputy Chief of Staff for Operations and Plans (DCS OPS) will—
  - (1) Establish procedures through the combat development process to ensure that safety and health criteria are included in requirements documents for new or improved Army materiel.
  - (2) Evaluate the associated residual risks for individual systems and provide formal feedback to using commands on the rationale for accepting those risks whenever a safety materiel change is not funded. (See AR 70-1.)
  - (3) Ensure DA system safety requirements are included during multiple-Service materiel developments when the other Service has program coordination responsibility.

(4) Furnish a representative (General Officer/Senior Executive Service level) to serve on the Army Safety Action Team (ASAT).

g. The Deputy Chief of Staff for Logistics (DCSLOG) will—

(1) Act as the Army Staff (ARSTAF) proponent for the Army Safety-of-Flight (SOF) and Safety-of-Use (SOU) Programs. (See AR 95-1 and AR 70-1.)

(2) Ensure there is an effective reporting system for appropriate feedback of safety issues on fielded systems from the user to the combat and materiel developers and the USASC.

(3) Chair the ASAT to address significant Army-wide safety issues.

(a) Objectives of ASAT are to—

1. Provide the OCSA with recommendations and information involving air and ground equipment safety issues.

2. Coordinate, expedite, advise, and provide recommended direction to ensure safety correction measures maximize Army readiness, safety and training.

(b) Convene meetings of principal members of the ASAT. Provide ASAT principals Hazard Executive Summaries upon receipt and without delay. Include advisory members as needed:

1. Principal members are as follows:

- Office of the Assistant Secretary of Army for Acquisition, Logistics and Technology (OASA (AL&T)).
- Office of Deputy Chief of Staff Operations and Plans (DCSOPS).
- Office of Deputy Chief of Staff Logistics (Chairman).
- Office of the Deputy Chief of Staff for Programs.
- Director of Army Safety (DASAF).
- Army Materiel Command (AMC).
- Appropriate Program Executive Officer (PEO), Deputy for Systems Acquisition (DSA) or equivalent.
- Applicable proponent Branch Chief.
- Applicable Materiel Developer.

2. Advisory members are as follows:

- Office of Deputy Chief of Staff for Personnel (DCSPPER).
- Office of the Chief Public Affairs (OCPA).
- Office of the Chief, Legislative Liaison (OCLL).
- Office of the Chief, Army National Guard Bureau (NGB-ARZ-D).
- Office of the Chief, Army Reserve (DAAR-OP).
- Office of the Assistant Secretary of the Army (Installations and Environment) (OASA (I&E)/Environment, Safety and Occupational Health (ESOH).

3. Other agencies and subject matter experts may be included as directed by the Director of Army Staff or the chairperson.

(c) The chairperson will maintain and distribute a list, by name, of principal ASAT members and action officers, for use in coordination of safety-of-flight/use issues.

(4) Ensure system safety engineering and management are considered in the integrated logistics support (ILS) process. (See AR 700-127.)

h. The Chief of Engineers (COE) will—

(1) Establish, maintain, and use facility-specific system safety engineering and management and health analysis procedures for the design, construction, and disposal of military construction projects.

(2) Assist the user as necessary in developing the preliminary hazard list (PHL) for facility projects. Coordinate the status of all open hazards with the user during each major design review.

(3) Evaluate potential Army contractors during the architect or engineer selection process to ensure they can comply with the contractual safety requirements.

(4) Ensure that hazards inherent to the design, equipment, and intended use of the facility are identified and eliminated or controlled.

(5) With weapon system design data provided by the materiel developer in the support facilities annex, ensure that current facility-related safety and health information is identified and documented in the support facility annex (SFA) of ILS plans (see AR 700-127 and DA Pam 700-55) according to the requirements of paragraphs *p* and *q* of this regulation.

(6) Ensure facility-related hazards are documented, and corrective actions are implemented to reduce the risk to acceptable levels. Document residual hazards utilizing the SSRA format (fig 1), modified as appropriate, evaluated, and accepted by the appropriate decision authority.

(7) Establish policies and procedures to ensure that changes to the intended use of Army facilities (that are identified

by the user) are evaluated as to safety impact and that any increases in risk are resolved or accepted according to appendix B.

*i.* The Surgeon General (TSG) will—

(1) Manage the Army Health Hazard Assessment (HHA) Program. (See AR 40-10.)

(2) Develop standards in the form of personnel exposure limits or threshold values and human tolerance criteria that, if exceeded, could result in a health hazard.

(3) Develop physiological and medical databases to support safety and health analyses of Army materiel.

(4) Provide technical assistance to materiel developers-program executive officers (PEOs)/program managers (PMs)/testers on evaluating health hazards inherent to, or resulting from, operation of materiel systems.

(5) Review and provide medical input to safety releases for tests.

(6) Ensure that the Health Hazard Assessment Report (HHAR) is included as part of the Safety Assessment Report (SAR).

(7) When acting as a PEO or PM, perform the duties under paragraphs *p* and *q* of this regulation, as appropriate.

(8) When acting as a combat developer, perform the duties under paragraph *s* of this regulation, as appropriate.

*j.* Chief of Public Affairs will furnish a representative (General Officer/Senior Executive Service level) to serve on the Army Safety Action Team (ASAT).

*k.* Chief, Legislative Liaison will furnish a representative (General Officer/Senior Executive Service level) to serve on the ASAT.

*l.* The Chief, Army Reserve will furnish a representative (General Officer/Senior Executive Service level) to serve on the ASAT.

*m.* The Director of Army Safety (DASAF) will—

(1) Develop, coordinate, and disseminate system safety program policies.

(2) Manage the Army System Safety Program and its interface with the Manpower and Personnel Integration (MANPRINT) program and other disciplines.

(3) Coordinate system safety issues with Headquarters, Department of the Army (HQDA) agencies, major Army commands (MACOMs) and PEOs.

(4) Establish, coordinate, and publish annual system safety objectives for implementation by Department of the Army (DA) organizations.

(5) Evaluate compliance with Army system safety program requirements.

(6) Furnish a representative (General Officer/Senior Executive Service level) to serve on the Army Safety Action Team (ASAT).

*n.* The Commander, USASC, will—

(1) Assist the DASAF in developing system safety policies, objectives, and evaluation standards.

(2) Provide technical assistance to ASA(RDA) and DISC4 to determine the accuracy and completeness of SSRAs being considered for AAE-level decisions on acceptance of risk.

(3) Provide an independent safety assessment of ASARC systems to the ASARC secretary (ASA(RDA)). Provide a copy to the Office of the Deputy Chief of Staff for Personnel (ODCSPER) (MANPRINT Directorate).

(4) Develop and maintain an Army accident database for use in risk assessment decisions.

(5) Establish, identify, and maintain a DA program of generic system safety research in support of Army development and acquisition programs.

(6) Develop and disseminate improved system safety engineering techniques.

(7) Provide system safety lessons learned for MANPRINT analyses and input this data to the automated MANPRINT database at Materiel Readiness Support Activity (MRSA).

(8) Establish DA guidance for program managers and equivalent managing activities regarding requirements to track all hazards and provide for timely communication of information on system-wide risks and controls among operators, trainers and materiel developers. USASC will develop and maintain a DA-level Hazard Communication System to provide for the exchange of hazard information from accident data to all managing activities as well as hazard information from PMs across the Army.

*o.* Commander, Army Materiel Command, will furnish a representative (General Officer/Senior Executive Service level) to serve on the Army Safety Action Team (ASAT).

*p.* The Army PEOs will—

(1) Act as the safety officer for assigned systems with responsibility for the proper planning and execution of system safety requirements.

(2) Act as risk acceptance authority for risk levels defined by appendix B.

(3) Furnish a representative (General Officer/Senior Executive Service level) to serve on the Army Safety Action Team (ASAT).

*q.* The PM will—

(1) Ensure that a tailored system safety program is implemented for all systems, to include nondevelopmental items

(NDI) and MCM efforts. Develop and update the System Safety Management Plan (SSMP) as part of the acquisition strategy.

(2) Ensure safety criteria are included in design and equipment specifications.

(3) Establish and maintain a Hazard Tracking System to provide a total life-cycle record of the disposition of all system hazards. (See DA Pam 385-16 for guidance on structure and procedures for hazard tracking.)

(4) Include SSRA for all residual hazards being considered for acceptance in all MDR packages and forward to the appropriate decision level. Institute risk management procedures as described in appendix B and act as the risk acceptance authority for risk levels defined by appendix B. A formal SSRA will be used to document the acceptance of all risks exceeding the criteria therein for "low" risk. Format for "low" risk hazards will be at the discretion of the PM. The PM reserves the option to decide whether or not to prepare a formal SSRA to be sent forward. However, the decision on how to process the "low"-risk SSRA will have no impact on the tracking of hazards, as all hazards will be tracked. Provide formal feedback to the combat developer, materiel developer, logistician, and the USASC on the safety risks accepted at MDRs and in process reviews (IPRs) for all assigned systems.

(5) Provide adequate resources for the implementation and maintenance of an effective system safety effort.

(6) Compile and apply historical safety and health data (system safety lessons learned) during the early acquisition program.

(7) Establish a system-specific system safety working group (SSWG) to track hazards and ensure program coordination for all major and Army Designated Acquisition Program (ADAP) systems. Nonmajor systems may be grouped by common characteristics under an SSWG. DA Pam 385-16 provides guidance on the composition and other characteristics of the SSWG. The requirements for an SSWG may be fulfilled by another similar group meeting the characteristics identified in DA Pam 385-16. The SSWGs will provide input, including SSMP, to the appropriate MANPRINT Joint Working Groups (MJWGs).

(8) Ensure that current facility-related safety and health information is identified and documented in the SFA of ILS plans. (See AR 700-127 and DA Pam 700-55.)

(9) Provide an SAR and HHAR to the appropriate test agencies 60 days prior to start of any and all testing (including technical demonstrations, technical tests (TTs), and user tests (UTs)). Request a safety release (see fig 2) to be issued prior to all tests and pretest-training involving troops. This includes tests with type-classified materiel. U.S. Army Test and Evaluation Command (TECOM) (AMSTE-ST) will coordinate and issue safety releases for all PMs or materiel developers, except for Information Systems Command, U.S. Army Health Services Command (HSC), and Medical Research and Development Command-supported PMs, who will receive safety releases from those headquarters.

(10) Ensure that safety and health issues are identified in all Test and Evaluation Master Plans (TEMPS) to obtain data needed for safety verification of the system.

(11) Ensure final system safety reports and hazard analyses are forwarded to Commander, Defense Technical Information Center (DTIC), ATTN: DTIC-FDAC, Cameron Station, Alexandria, VA 22304-6415, and to the automated MANPRINT database at MRSA, ATTN: AMXMD-C, Lexington Bluegrass Depot, KY 40511-5004. (See AR 70-9.)

(12) Sixty days prior to fielding, provide the gaining commands with all relevant system safety documentation developed during the acquisition process which provides supporting rationale for operational procedures, safety-critical maintenance and other support actions, and unit-level training requirements. As a minimum, these documents will include updated SARs, SSRAs, Hazard Classification Data, and Range Surface Danger Zones. As system fielding is expanded to other commands, update the system safety documentation with lessons learned by initial users. Provide hazard analyses and SSRAs to the combat developer as they are developed.

(13) Track and analyze worldwide accident and incident data, equipment improvement recommendations (EIRs), quality deficiency reports (QDRs), and other field data for indications of hazards inherent in materiel design and use, and take positive action to correct safety problems.

(14) Ensure all hardware modifications, service life changes, and changes to operating procedures are evaluated for safety impact. An explanation of the safety impact will be included in the formal evaluation documentation. If system degradation occurs, an SSRA will be included in the safety impact. Evaluate and report to the combat developer the safety effects of mission changes, and operating and training procedures in fielded systems.

(15) When materiel is reprocured, assure that safety and health evaluations are performed to verify that the safety characteristics of the original configuration are not compromised and that no new hazards are introduced. These evaluations will be conducted during the initial production tests (IPTs) or other testing. These evaluations are required when—

(a) Specifications have changed significantly over the currently fielded version, or

(b) There is a change in configuration due to competition under a performance specification, or

(c) A mission change has occurred.

(16) Initiate corrective action immediately upon identification of a significant hazard in fielded systems and materiel. The PM will also provide hazard alert information to the MATDEV and CBTDEV commands and the appropriate staffs within HQDA, to provide for the timely management of the associated risks. Information updates will

be provided in accordance with the overall procedures outlined below, as supplemented by the materiel development command to address commodity-specific requirements (see para v(6)). (Ammunition and explosives malfunctions covered by established surveillance procedures are covered by AR 75-1 and are excluded from these procedures and the safety of use messages (SOUM) process outlined in AR 750-6. Medical supplies, equipment, drugs, and biological concerns are covered by AR 40-61 and are also excluded from the SOUM process as outlined in AR 750-6.)

(a) When a hazard is identified that has potentially significant impact upon Army training or operations, the PM, in conjunction with the cognizant MATDEV agency, will immediately alert the ASAT Chairman. This notification will be in the form of a Hazard Executive Summary (Hazard EXSUM). This Hazard EXSUM will normally include a description of the problem, a preliminary determination of risk, the potential operational impact, the current logistical status and the recovery concept. However it should not be delayed if this data is not yet available. It is understood that the accuracy and completeness of this initial assessment will be dependent upon the technical and operational data available at that point; the intent is to provide an early hazard alert to provide the basis for timely and collective assessment of the risks and potential controls as more information is gained on the nature and extent of the problem. The Hazard EXSUM will be updated as additional technical and operational knowledge become available.

(b) Significant hazards will normally be eliminated or minimized by immediate materiel modifications or changes to operational or maintenance procedures. If it is not feasible to eliminate the hazard, the PM will initiate a System Safety Risk Assessment (SSRA) to coordinate the decision on the controls to be implemented and the acceptance of any residual risk. The PM will recommend options that eliminate the hazard. The SSRA will evolve from the Hazard EXSUM above. SSRAs on fielded systems will be processed as follows:

1. *High Level Risks.* If a hazard has been validated (i.e., the analysis for Part I of the SSRA has been completed by the program office or equivalent managing activity) and there are no resources available to reduce the risk to a lower level, the high risk SSRA will be brought before the ASAT for coordination. The ASAT will meet without delay. Telephonic or electronic notification of a proposal to accept a high level risk should precede written notification of the ASAT members.

2. *Medium Level Risks.* If a hazard has been validated as a Medium-level risk and available controls cannot reduce the risk to Low level, an SSRA will be staffed within 21 calendar days from initiation (Part I) to completion (Part V). Concurrent processing by multiple agencies is encouraged when one organization's evaluation is not dependent on another's input.

3. *Low Level Risks.* Low risk hazards are managed by the responsible PM or other managing activity and may be documented by a risk determination accomplished by the applicable Command's Engineering activity. Implementation of controls and decisions to accept residual risk will be made as quickly as possible, consistent with accurate assessment of the hazard and potential options.

*r. Commanders of MACOMs or field operating agencies (FOAs) as using commanders will—*

(1) Ensure all systems are used according to safety and health guidance published in technical, field and training manuals, SOUs, SOFs, bulletins, circulars, and Army and Federal regulations.

(2) Provide EIR or QDR for deficiencies, malfunctions, or failures that create unsafe conditions or hazards.

(3) Identify through the accident reporting system inadequacies contributing to an accident and analyze these inadequacies to ensure that safety-compromising trends are identified. (See AR 385-40.)

(4) Define specific safety requirements to the combat developer (unique to the intended area of operations), including any relevant host nation standards, for safety issues.

(5) Review modifications of mission profiles for safety impact. Report the results of this review to the combat developer.

*s. Commanders of MACOMs or FOAs, as the combat developer will—*

(1) Include system safety requirements in materiel requirements documents. When possible, qualitative requirements will be supplemented by quantitative ones.

(2) Review PM-provided system safety risk assessments to establish the user representative's position on the acceptability of the associated risk.

(3) Unless earlier established by the PM, establish an SSWG during concept evaluation for major acquisition programs.

(4) Incorporate the expected cost of accidents for alternative designs in the cost and operational effectiveness and analysis (COEA). (See AR 71-9.)

(5) Include any system safety tradeoffs and issues in operation, selection, qualification, and training for the combat developer's input to the MANPRINT Assessment and the System MANPRINT Management Plan (SMMP).

(6) Review modifications of tactics, training, and doctrine related to employment of Army materiel for safety impact. Provide a summary of this review to the user and the materiel developer and PM.

(7) Serve as a member of the technology safety working group to assist in evaluating the adequacy and content of safety and health data for technologies systems throughout the technology base development process.

*t. Commanders of MACOMs or FOAs will, as the user test agency (see AR 73-1)—*

(1) Review the safety release for determination of necessary controls and procedures for safe conduct of user testing.

(2) Design the test to verify fixes for previously identified hazards and to investigate specific safety issues. Report all new hazards identified in testing.

(3) Ensure MANPRINT safety issues, concerns, and questions are documented in the independent evaluation plan and the test support plans.

u. Commanders of MACOMs or FOAs, as the training developer will—

(1) Address residual hazards in assigned systems' programs of instruction, training courses, and associated field manuals.

(2) Ensure all hazards controlled by procedures or training are addressed in training manuals for those systems.

v. Commanders of MACOMs or FOAs, as materiel development commanders will—

(1) Establish, develop, and implement a tailored system safety program for in-house and contracted basic research or early technology development during research, development, test, and evaluation (RDTE) funding per AR 70-1, appendix C.

(2) Develop and maintain a technology safety working group for basic research and early technology development program (AR 70-1, app C). The working group will provide safety and health data for emerging technology and systems to the PEO/PM; materiel developer; Director of Technology, Planning, and Management; and other appropriate user and developer organizations.

(3) Incorporate system safety data and information from the SAR and SSRA into the MANPRINT database at the U.S. Army Materiel Readiness Support Activity.

(4) When acting as the PEO/PM or after the transition of a system from the PEO/PM, perform the duties as appropriate under paragraphs *p* and *q* of this regulation.

(5) When acting as an independent evaluator or tester, perform the duties as appropriate under paragraph *w* below.

(6) For fielded systems or materiel, establish procedures for alerting the ASAT Chairman of impending safety issues with significant risk or that have the potential for significant impact upon operations and training. General requirements are established by paragraph *q*(16). If such changes require transmission of safety information to the field, the MATDEV agency will develop and coordinate a Safety of Flight (SOF)/Aviation Safety Action Message (ASAM), or a Safety of Use (SOU)/Ground Precautionary Message (GPM). Specific procedures for developing and coordinating these messages are contained in AR 95-1 for aviation systems and AR 750-6 for ground systems. The MATDEV command will publish a supplement to this regulation to tailor those requirements and establish criteria as follows:

(a) The specific levels of risk requiring a Hazard EXSUM.

(b) Procedures for validation of the level of risk associated with the hazard.

(c) Specific procedures, formats, and timelines for distribution of the Hazard EXSUM.

(d) The content and organization of technical supporting information to be provided during coordination external to the PM organization.

(7) Furnish a representative (General Officer/Senior Executive Service level) to serve on the ASAT.

w. Heads of operational test (OT), UT and TT and evaluation agencies, activities, and commands will—

(1) Ensure that test directives, evaluation plans, and test design plans for all TTs and UTs require the collection and recording of data from which an independent assessment of hazards can be made and that the results are documented in all test reports and independent evaluation reports (IERs).

(2) Verify the effectiveness of design changes or procedural control(s) that have been incorporated to reduce the risk associated with previously identified hazards.

(3) Assure a safety release is obtained from the TECOM prior to all tests (as defined in AR 73-1) and pretest training involving troops for all systems except those developed by the Information Systems Command, Health Services Command, or Medical Research and Development Command. In those cases, the safety release is obtained from each command's headquarters safety office. This includes tests with type-classified materiel if used in a new or innovative manner.

(4) MACOMs of test organizations may issue endorsements to a TECOM safety release if desired. If a safety release endorsement is issued, it will be provided to the test unit and the board, agency, or command conducting the test at least 10 days before test player training begins. A safety release endorsement may require more stringent hazard control measures, but it cannot relax any control measures which are imposed by the safety release. (See AR 73-1.)

x. Army National Guard (ARNG), State adjutants general, and installation commanders will—

(1) Ensure that when accidents occur involving materiel failures, malfunctions, design or procedural defects, the responsible materiel manager commander be promptly notified when the incident results or could result in severe injury or death.

(2) Ensure appropriate EIR or QDR is submitted to the materiel manager for material deficiencies, malfunctions, or failures that create unsafe conditions or hazards.

(3) Prepare a PHL identifying specific hazards related to that type of facility during requirements development for facility projects. This data will be forwarded concurrently to the MACOM and the proper U.S. Army Corps of Engineers (USACE) district.

(4) Evaluate the safety characteristics of local projects. Forward documentation of identified hazards and risk

acceptance rationale to next higher headquarters (ARNG documentation will be maintained at the State safety office). These projects include—

- (a) Local construction projects (including new construction) as well as modifications to existing facilities.
- (b) Locally engineered, fabricated, or purchased equipment or facilities.
- (c) Local programs to test new equipment, procedures, doctrine, or organizational concepts.
- (d) Local programs to maintain or rebuild materiel and weapon systems.
- (5) Report to USACE any deficiencies, malfunctions, failures, or other situations resulting in facility-related hazards.
- (6) Identify safety-related information for facility and equipment configuration (early planning and design stages) and the safety impact of changes to the intended use of Army facilities to the USACE district.
- (7) Furnish a representative (General Officer/Senior Executive Service level) to serve on the ASAT.

y. The heads of agencies assigned as the logistician will ensure system safety engineering and management are considered in the integrated logistic support process through the review of program management documentation, participation in ILS Management Team, other review meetings, and as an IPR member. (See AR 700-127.)

## 5. Policy

- a. Army commanders and managers will implement system safety engineering and management policies consistent with their missions.
- b. System safety will be applied and tailored to all Army systems and facilities throughout their respective life cycles and integrated into other MANPRINT concerns. For NDI systems developed by private industry, depots, other services or foreign governments, application of system safety should start immediately after definition and identification of need. (See AR 70-1 and AR 415-15.)
- c. As part of this total life cycle program, system safety engineering and management will be applied during in-house and contracted basic research, early technology development (AR 70-1, app C) and advanced systems concepts for existing, next generation, and notional systems.
- d. An SSMP will be developed for the acquisition of all systems to establish Army management objectives and responsibilities for execution of a system safety program for the life cycle of a system. This will be updated and provided at each MDR.
- e. Contractor system safety program requirements will be tailored according to the guidance contained in Military Standard (MIL-STD) 882.
- f. Systems with residual hazards will not be fielded or used without coordination of the associated risks with the combat developer and the user(s). The AAE or other designated acquisition authority will approve documentation for risk acceptance. The process for reporting and acceptance of residual hazards will be included in the SSMP. (See app B.)
- g. Recommendations on the acceptability of the safety and health characteristics of the system will be available for timely review at all MDRs of Army materiel. For facilities and installation of equipment, system safety engineering analyses will be available for developing design criteria review and approval at design reviews, preconstruction conferences, change order reviews, and preoperational inspections and modifications.
- h. An SSWG or equivalent groups meeting the requirements of DA Pam 385-16 will be formed and maintained throughout the life cycle for all major and ADAPs systems. Nonmajor systems can be grouped by common characteristics under a SSWG. Primary responsibility for establishing this group rests with the PM. If a PM has not been designated, the combat developer will establish the SSWG in coordination with the MJWG.
- i. Historical safety and health data (system safety lessons learned) from other systems will be used in developing new and similar systems and modifications to fielded systems. Also, information from other disciplines, such as human factors engineering (HFE) and health hazards, will be used as part of implementing the system safety effort and identifying system safety hazards.
- j. Verifiable safety and health criteria in the form of military standards, Federal standards, and national consensus standards (for example, American National Standards Institute (ANSI), National Fire Protection Association (NFPA), Department of Transportation (DOT)), or equivalent standards, will be included in requirements documents and will be applied to Army systems according to AR 385-10.
- k. The capability of a contractor to define and achieve system safety requirements will be evaluated during source selection.
- l. Safety and health verification and evaluation will be an integral part of the system safety effort. Safety and health acceptability of the system will be verified primarily by test and evaluation. (See AR 73-1.)
- m. Materiel modification programs (including depot overhaul, renovation, and retrofit) and mission changes will be evaluated for their effects on the overall safety and health features of the system and supporting facility.
- n. An independent assessment of system safety risks will be provided in all ASARC and IPR packages and will be provided directly to the program decision authority by the appropriate safety support for all MDRs and IPRs. A copy will be provided to Chief, MANPRINT Policy Division, HQDA, ATTN: DAPE-MRP, Washington, DC 20310-0300.
- o. All tests and pretest training involving soldiers require safety releases. This includes tests with type-classified

materiel if used in a new or innovative manner. Copies of safety releases will be provided to the commander of the organization supplying these soldiers.

*p.* Emphasis will be placed on designing out system hazards. Training, administrative procedures, and labels will be used only as a last option. (See priority list in MIL-STD-882.)

*q.* Acceptance of system safety risks will be performed at a level of management authority commensurate with the risk. (See app B.) A formal SSRA will be used to document the acceptance of all risks exceeding the criteria therein for "low" risk. A separate SSRA will be developed for each residual hazard and will be processed at an appropriate time consistent with the design decision process for that system. It is not desired that processing of SSRAs be deferred until the MDR.

*r.* Hazards discovered in fielded systems and materiel shall be assessed and eliminated, controlled, or accepted in a manner and with a degree of urgency proportionate to the degree of potential risk.

*s.* For fielded systems and materiel, information on impending High risks will be communicated in a timely and complete manner to HQDA. The initial level of risk before application of any controls will determine the notification level for the hazard. The notification levels are the same as the decision authority defined in appendix B. The residual level of risk after consideration of recommended controls will determine the signature level for acceptance of the residual risks.

*t.* All identified hazards and the status of their corrective actions will be recorded in a hazard-tracking system and maintained until system disposal.

*u.* The SSWG will ensure that documentation of safety issues are provided to the appropriate MJWG MANPRINT coordinator for integration and coordination with the other domains of MANPRINT per AR 602-2 in the Materiel Acquisition Process. The MANPRINT program does not replace any of the activities, responsibilities, or reporting channels of the system safety program specified herein.

*v.* Upon update of the SSMP, a copy will be provided to the MJWG.

## **6. Objectives**

The primary objectives of system safety are as follows:

*a.* Maximize operational readiness and mission effectiveness through accident prevention by ensuring that appropriate hazard-control measures are designed into the system in a timely manner.

*b.* Ensure hazards associated with new technology or operations are identified for consideration in later applications.

*c.* Ensure hazards are eliminated or controlled through design and that risk associated with residual hazards is formally identified, accepted by the appropriate management decision level, and documented.

*d.* Identify hazards and manage the risk associated with these hazards for each system or facility throughout its life cycle in all possible configurations and all mission variations.

---

## System Safety Risk Assessment

### Part I

1. Item and system identification. (For systems containing radioactive materials or explosives, a brief statement will include identifying the status of the radioactive material license, Army authorization, range fans, or the applicable hazard classifications as listed.)
2. For each residual hazard, provide the following:
  - a. Hazard topic.
  - b. Hazard description and consequences or risk acceptance of the proposed configuration.
  - c. Hazard classification (severity and frequency according to MIL-STD-882).
  - d. Source document or reference.
  - e. Alternative actions that could reduce hazard level.
3. Recommendations regarding risk acceptance.

*(Project office signature)*

### Part II

Recommendations by appropriate Safety Manager

*(Safety)*

### Part III

Recommendations by the Combat Developer

*(Designated user representative)*

### Part IV

Recommendations by Materiel Developer

*(Designated developer representative)*

### Part V

\*Decision of appropriate Acquisition Manager (app B)

*(Acquisition)*

\*Note: For risks requiring AAE decision, the System Safety Risk Assessment will be coordinated with the Office of the Chief of Staff, Army. HQDA positions on the acceptability of risks will be established by the Deputy Chief of Staff for Personnel according to paragraph 4c(2) of this regulation.

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Figure 1. Sample format for documentation of risk assessments

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## Safety Release

### 1. Purpose of this safety release.

### 2. References.

3. System description. Give the name, type, and model number of the system and also the system's mission. If a component, name the parent system. State the specific test for which the safety release is issued (for example, the test number as it appears in the 5-Year Test Program).

### 4. Requirements and background.

a. Requirements and procedures to conduct testing safely including range safety fans (user test only).

b. Background and testing (DT only).

(1) Safety Assessment Report (SAR) and Health Hazard Assessment Reports (HHARs) will be enclosed or cited. If no SAR or HHAR exists, identify that fact.

(2) Summarize testing done or other basis (such as analyses or inspections) for safety release.

(3) State results of testing, safety problems, and significant incidents.

(4) Define or enclose development data to assist in preparing range safety fans, requirements, and procedures.

### 5. Conclusion and recommendations.

a. Indicate whether the system is safe for testing or whether it is safe for testing with exceptions. List hazards and any technical, maintenance, or operational limitations or precautions needed to prevent injury and property damage during testing. Include sufficient detail about the restrictions and controls needed during testing and training that the commander does not have to refer to any other data in order to ensure soldier safety. Outline the risks involved (severity and probability) if these limitations or precautions are not followed.

b. Highlight any known safety problems that will require investigation during testing. Outline any changes made to the system since previous testing or since the SAR or HHAR were written. State the effect on safety from these changes.

*(Signature)*

*(TECOM Safety Director or Information Systems Command  
Safety Director or Health Service Command Safety Director)*

### 6. The above defined limits and procedures can be realistically supported during the test.

*(Signature)*

*(Commander of soldiers involved in the test)*

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Figure 2. Sample format of safety release

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## **Appendix A** **References**

### **Section I** **Required Publications**

#### **AR 70-1**

Army Acquisition Policy. (Cited in paras 4a(6), 4c(5), 4f(2), 4g(1), 4v(1), 4v(2), 5b, and 5c.)

#### **AR 73-1**

Test and Evaluation Policy. (Cited in paras 4t, 4w(3), 4w(4), and 5l.)

#### **AR 95-1**

Flight Regulations. (Cited in para 4g(1) and 4v(6).)

#### **AR 385-10**

The Army Safety Program. (Cited in para 5j.)

#### **AR 385-40**

Accident Reporting and Records. (Cited in para 4r(3).)

#### **AR 602-2**

Manpower and Personnel Integration (MANPRINT) in the System Acquisition Process. (Cited in para 5u.)

#### **AR 700-127**

Integrated Logistics Support. (Cited in paras 4g(4), 4h(5), 4q(8), and 4y.)

#### **AR 750-6**

Ground Safety Notification System. (Cited in para 4q(16) and 4v(6).)

#### **DA Pam 385-16**

System Safety Management Guide. (Cited in paras 4q(3), 4q(7), and 5h.)

#### **DA Pam 700-55**

Instructions for Preparing the Integrated Logistic Support Plan. (Cited in paras 4h(5) and 4q(8).)

#### **MIL-STD-882**

System Safety Program Requirements. (Cited in para 5e and 5p.)

### **Section II**

### **Related Publications**

A related publication is merely a source of additional information. The user does not have to read it to understand this regulation.

#### **AR 11-2**

Management Control

#### **AR 40-10**

Health Hazard Assessment Program in Support of the Army Materiel Acquisition Decision Process

#### **AR 40-60**

Policies and Procedures for the Acquisition of Medical Material

#### **AR 70-9**

Army Research Information Systems and Reports

#### **AR 70-25**

Use of Volunteers as Subjects of Research

**AR 71-9**  
Materiel Requirements

**AR 75-1**  
Malfunctions Involving Ammunition and Explosives (RCS CSGLD-1961 (MIN))

**AR 140-483**  
Army Reserve Land and Facilities Management

**AR 415-15**  
Army Military Construction Program Development and Execution

**AR 415-32**  
Engineer Troop Unit Construction in Connection with Training Activities

**AR 602-1**  
Human Factors Engineering Program

**CFR 40**  
Resource Conservation and Recovery Act, RCRA, 40 CFR 124, 240-299, Code of Federal Regulations

**DA Pam 738-750**  
Functional Users Manual for the Army Maintenance Management System

**DODD 5000.1**  
The Defense Acquisition System

**DODI 5000.2**  
Operation of the Defense Acquisition System

**DODI 5000.36**  
System Safety Engineering and Management

**TB 700-2**  
Department of Defense Ammunition and Explosives Hazard Classification Procedures

**Section III**  
**Prescribed Forms**  
This section contains no entries.

**Section IV**  
**Referenced Forms**  
This section contains no entries.

## **Appendix B** **Risk Acceptance Requirements and Associated Documentation**

### **B-1. Decisions to accept risks associated with residual system safety hazards**

Decisions to accept risks associated with residual system safety hazards will be made at a management level commensurate with the risk. AR 70-1 establishes the AAE/PEO/PM chain as the programmatic decision structure for system acquisitions and modifications. Risk assessment criteria contained in MIL-STD-882 will be used to assess risks in Army systems and facilities. Based on these criteria, risks will be categorized in a three-tiered hierarchy which is tailored to the individual system requirements and which is applicable to the individual program decision authority structure.

### **B-2. Department of the Army model for risk acceptance authority**

Figure B-1 provides the Department of the Army model for risk acceptance authority. This model can be used if appropriate for any program. Should program requirements dictate a different decision authority, an appropriate matrix will be developed by the PM. The recommended matrix will be submitted for approval to the AAE or designated authority. For new start systems, this should be done as part of the MDR I Acquisition Strategy. The risk acceptance hierarchy will be published and updated as required in the appropriate System Safety Management Plan.

## DECISION AUTHORITY MATRIX

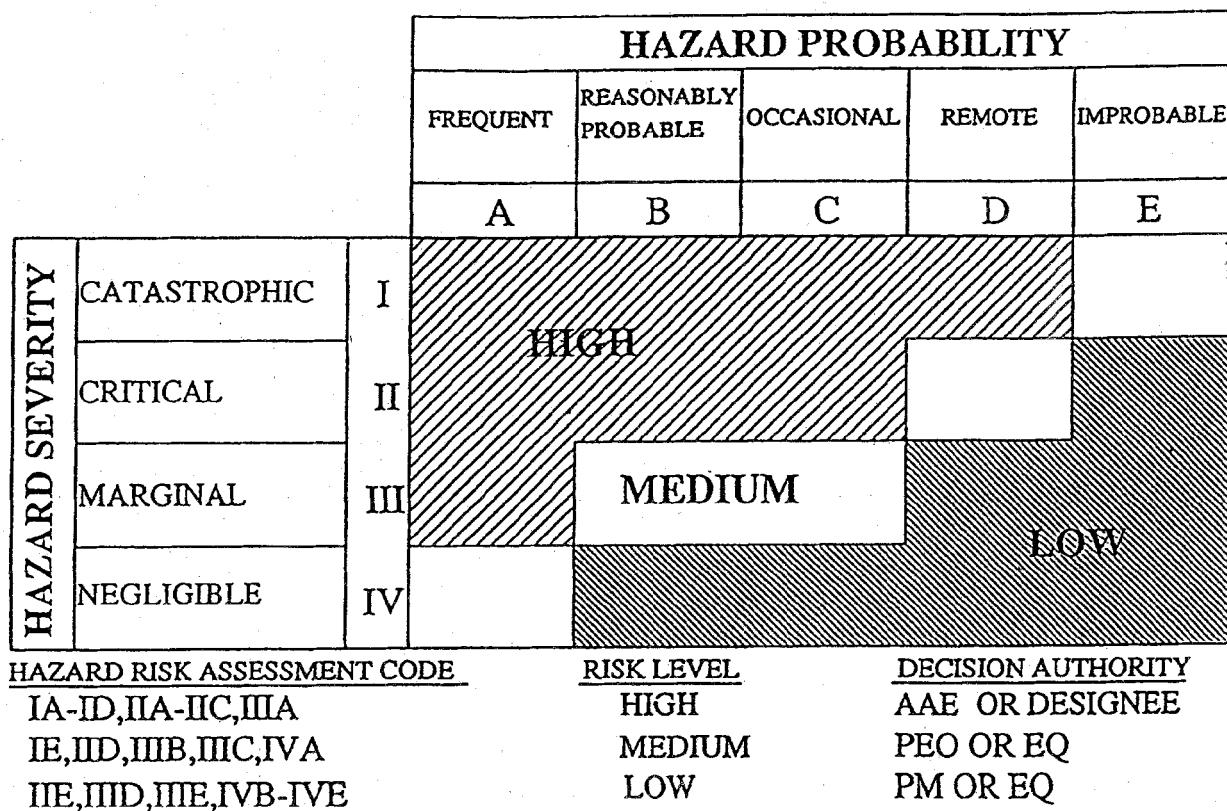


Figure B-1. Decision authority matrix

## **Glossary**

### **Section I** **Abbreviations**

#### **AAE**

Army Acquisition Executive

#### **ADAP**

Army Designated Acquisition Program

#### **AMC**

U.S. Army Materiel Command

#### **AMSAA**

Army Materiel Systems Analysis Agency

#### **ANSI**

American National Standards Institute

#### **AR**

Army Regulation

#### **ARNG**

Army National Guard

#### **ARSTAF**

Army Staff

#### **ASARC**

Army Systems Acquisition Review Council

#### **ASA(AL&T)**

Assistant Secretary of the Army (Acquisition, Logistics, and Technology)

#### **ASA(RDA)**

Assistant Secretary of the Army (Research, Development, and Acquisition)

#### **ASAT**

Army Safety Action Team

#### **COE**

Chief of Engineers

#### **COEA**

Cost and operational effectiveness and analysis

#### **CSA**

Chief of Staff, U.S. Army

#### **DA**

Department of the Army

#### **DA Cir**

Department of the Army circular

#### **DA Pam**

Department of the Army pamphlet

#### **DASAF**

Director of Army Safety

**DCSLOG**

Deputy Chief of Staff for Logistics

**DCSOPS**

Deputy Chief of Staff for Operations and Plans

**DCSPER**

Deputy Chief of Staff for Personnel

**DISC 4**

Director of Information Systems for Command, Control, Communications, and Computers

**DOD**

Department of Defense

**DODD**

Department of Defense directive

**DODI**

Department of Defense instruction

**DOT**

Department of Transportation

**DSA**

Deputy for Systems Acquisition

**DT**

development testing

**DTIC**

Defense Technical Information Center

**EIR**

equipment improvement recommendation

**EXSUM**

executive summary

**FOA**

field operating agency

**HAZMIN**

minimization of toxic and hazardous waste

**HFE**

human factors engineering

**HFEA**

human factors engineering analysis

**HHA**

health hazard assessment

**HHAR**

health hazard assessment report

**HQDA**

Headquarters, Department of the Army

**HSC**  
U.S. Army Health Services Command

**IER**  
independent evaluation report

**ILS**  
integrated logistics support

**IPR**  
in process review

**IPT**  
initial production test

**MAA**  
mission area analysis

**MACOM**  
major Army command

**MADP**  
Major Acquisition Decision Program

**MANPRINT**  
Manpower and Personnel Integration

**MCM**  
materiel change management

**MCMR**  
materiel change management report

**MDR**  
milestone decision review

**MIL STD**  
military standard

**MJWG**  
MANPRINT Joint Working Group

**MRSA**  
Materiel Readiness Support Activity

**NDI**  
nondevelopmental item

**NFPA**  
National Fire Protection Association

**OASA(AL&T)**  
Office, Assistant Secretary of the Army for Acquisition, Logistics, and Technology

**OCLL**  
Office of the Chief of Legislative Liaison

**OCPA**  
Office of the Chief of Public Affairs

**ODCSPER**

Office of the Deputy Chief of Staff for Personnel

**OT**

operational test

**OTEA**

Operational Test and Evaluation Agency

**PEO**

program executive officer

**PHL**

preliminary hazard list

**PM**

program manager

**QDR**

quality deficiency report

**RD&A**

research, development & acquisition

**RDTE**

research, development, test, and evaluation

**SAR**

safety assessment report

**SFA**

support facility annex

**SMMP**

System MANPRINT Management Plan

**SOF**

safety of flight

**SOU**

safety of use

**SOUM**

safety of use messages

**SSMP**

System Safety Management Plan

**SSPP**

System Safety Program Plan

**SSRA**

System Safety Risk Assessment

**SSWG**

System Safety Working Group

**TECOM**

U.S. Army Test and Evaluation Command

**TEMP**

Test and Evaluation Master Plan

**TRADOC**

U.S. Army Training and Doctrine Command

**TSG**

The Surgeon General

**TT**

technical test

**USACE**

U.S. Army Corps of Engineers

**USAR**

U.S. Army Reserve

**USASC**

U.S. Army Safety Center

**USATHAMA**

U.S. Army Toxic and Hazardous Materials Agency

**UT**

user test

**Section II****Terms**

Terms used here are according to those in MIL-STD-882 unless Army requirements dictate otherwise.

**Accident**

Any unplanned event or series of events that result in death, injury, or illness to personnel, or damage to or loss of equipment or property. (Within the context of this regulation, accident is synonymous with mishap.)

**Acquisition and modification process**

The MJWG, as a minimum, includes representatives from all MANPRINT domains plus the AMC MSC ILS/MANPRINT Manager. The group manages all MANPRINT issues and provides oversight to ensure that MANPRINT plans are executed and objectives met. The group is established by the TRADOC proponent combat developer 3 to 6 months prior to Operational and Organizational Plan submission, and its representation depends on available assets and type of acquisition.

**Army Acquisition Executive (AAE)**

Principal advisor and staff assistant to the Secretary of the Army for acquisition of Army systems.

**Combat developer (CBTDEV)**

Command or agency that formulates doctrine, concepts, organization, training, materiel requirements, and objectives. Represents the user community over the life cycle of the system.

**Cost and operational effectiveness and analysis (COEA)**

Comparison between costs to develop, produce, distribute, and maintain a materiel system and the ability of the system to meet the requirement for eliminating or reducing a force or mission deficiency.

**Hazard**

A condition that is a prerequisite for an accident.

**HAZMIN**

The minimization of toxic and hazardous waste according to current regulations of the Environmental Protection Agency, as well as other county, State and Federal agencies, is of increasing concern to the Armed Forces. Consideration of HAZMIN early in the research, development, and acquisition cycle may reduce hazardous waste problems later, during production, maintenance, transportation, storage, and final disposal of equipment. Materials proposed for new

systems should be compared with the list of hazardous materials published in the Resource Conservation and Recovery Act, RCRA, Volume 40, Code of Federal Regulations, CFR 260 series. If such material is proposed for use, then studies should be made to find less hazardous material or to justify continued use. AR 200-1 applies. The U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) is available to assist as needed.

### **Health hazard**

An existing or likely condition, inherent to the operation, maintenance, storage or disposal of materiel or a facility, that can cause death, injury, acute or chronic illness, disability, or reduced job performance.

### **Health hazard assessment**

The application of biomedical and psychological knowledge and principles to identify, evaluate, and control the risk to the health and effectiveness of personnel who test, use, or service Army systems.

### **Human factors engineering**

A comprehensive technical effort to integrate into Army doctrine, materiel development, and materiel acquisition (to ensure operational effectiveness) all relevant information on—

- a.* Human characteristics.
- b.* Skill capabilities.
- c.* Performance.
- d.* Anthropometric data.
- e.* Biomedical factors.
- f.* Safety factors.
- g.* Training.
- h.* Manning implications.

### **Independent evaluation**

The process used by the independent evaluators to independently determine if the system satisfies the approved requirements. It will render an assessment of data from all sources, simulation and modeling, and an engineering or operational analysis to evaluate the adequacy and capability of the system.

### **Independent safety assessment**

That document prepared by the USASC and forwarded to the AAE assessing the risk of the residual hazards in a system prior to the MDRs.

### **Inherent hazard**

An existing or permanent hazard (such as voltage, for example).

### **Life cycle**

The life of a system from conception to disposal.

### **MANPRINT**

A comprehensive management and technical program to enhance human performance and reliability in the operation, maintenance, and use of weapon systems and equipment. MANPRINT achieves this objective by integrating the full range of human factors engineering, manpower, personnel, training, system safety and health hazards considerations into the materiel development.

### **Materiel acquisition decision process**

Those milestone reviews held to determine if a system is ready to progress to the next phase of the acquisition process.

### **Materiel developer (MATDEV)**

Command or agency responsible for the functional support for the research, development, and acquisition process.

### **Operational independent evaluator**

A command or agency, normally OTEA or TRADOC, independent of the materiel and combat developers, that conducts operational independent evaluations of Army systems.

### **Operational tester**

A command or agency that plans, conducts, and reports the results of operational testing. Operational testers are OTEA or designated operational testers, normally TRADOC.

**PEO-Separately reporting PM**

Individual responsible for administering a defined number of major or nonmajor acquisition programs who reports to and receives direction from the Army Acquisition Executive (AAE).

**Project-product manager**

Individual chartered to conduct business on behalf of the Army who reports to and receives direction from either a PEO, the AAE, or other materiel developer and is responsible for the centralized management of a specified acquisition program.

**Residual hazards**

Hazards that are not eliminated by design.

**Risk**

An expression of possible loss in terms of hazard severity and hazard probability.

**Risk assessment**

An evaluation of a risk in terms of loss should a hazard result in an accident and against the benefits to be gained from accepting the risk.

**Safety**

Freedom from those conditions that can cause death, injury, occupational illness, or damage to, or loss of, equipment or property.

**Safety assessment report**

A formal summary of the safety data collected during the design and development of the system. In it, the materiel developer summarizes the hazard potential of the item, provides a risk assessment, and recommends procedures or other corrective actions to reduce these hazards to an acceptable level.

**Safety confirmation letter**

A separate document or part of the independent evaluation report (IER) or position letter that provides the materiel developer with the DT or OT agency safety findings and conclusions, and states whether the specified safety requirements are met.

**Safety-health verification**

The development of data used to evaluate the safety and health features of a system to determine its acceptability, primarily done during developmental test (DT) and user or operational test (OT) and evaluation and supplemented by analysis and independent evaluations.

**Safety Release**

A formal document issued to any user or technical test organization before any hands-on training, use, or maintenance by troops. The Safety Release is a stand-alone document which indicates the system is safe for use and maintenance by typical user troops and describes the specific hazards of the system or item based on test results, inspections, and system safety analyses. Operational limits and precautions are included. The test agency uses the data to integrate safety into test controls and procedures and to determine if the test objectives can be met within these limits. A Limited Safety Release is issued on one particular system (Bradley Fighting Vehicle, Serial No. XXXXX). A Conditional Safety Release is issued when further safety data are pending (for example, completion of further testing or a certain safety test) and restricts a certain aspect of the test.

**System**

A composite, at any level of complexity, of trained personnel, procedures, materials, tools, equipment, facilities, and software. The elements of this composite entity are used together in the intended operational or support environment to perform a given task or achieve a specific production, support, or mission requirement.

**System MANPRINT Management Plan (SMMP)**

The SMMP serves as the planning and management guide and an audit trail to identify the tasks, analyses, tradeoffs, and decisions that must be made to address MANPRINT issues during the materiel acquisition process. The SMMP is initiated by the combat developer or training developer when the mission area analysis (MAA) identifies a battlefield deficiency requiring development of new or improved materiel. The SMMP will be updated as needed throughout the materiel acquisition process.

**System safety**

The application of engineering and management principles, criteria, and techniques to optimize safety within the constraints of operational effectiveness, time, and cost throughout all phases of the system or facility life cycle.

**System safety engineering**

An engineering discipline requiring specialized professional knowledge and skills in applying scientific and engineering principles, criteria, and techniques to identify and eliminate hazards or reduce the risk associated with the hazards.

**System safety lessons learned**

A collection of real or potential safety or health-related problems based on data analysis or experience that can be applied to future and current systems to prevent similar recurrences.

**System safety management**

An element of management that defines the system safety program requirements and ensures the planning, implementation, and accomplishment of system safety tasks and activities consistent with the overall program requirements.

**System Safety Management Plan**

A management plan that defines the system safety program requirements of the Government. It ensures the planning, implementation, and accomplishment of system safety tasks and activities consistent with the overall program requirements.

**System Safety Program Plan (SSPP)**

A description of planned methods to be used by the contractor to implement the tailored requirements of MIL-STD-882, including organizational responsibilities, resources, method of accomplishment, milestones, depth of effort, and integration with other program engineering and management activities and related systems.

**System Safety Risk Assessment**

A document that provides a comprehensive evaluation of the safety risk being assumed for the system under consideration at the milestone decision review.

**System safety working group**

A group, chartered by the PM, to provide program management with system safety expertise and to ensure communication among all participants.

**Technical independent evaluator**

A command or agency, independent of the PM or developing major subordinate command, that conducts technical independent evaluations of Army systems, normally Army Materiel Systems Analysis Agency (AMSAA) or TECOM.

**Technical tester**

The command or agency that plans, conducts, and reports the results of Army development testing on behalf of the command or agency.

**Technical tests**

A generic term for testing which gathers technical data during the conduct of development testing, technical feasibility testing, qualification testing, joint development testing, and contractor or foreign testing.

**Test agency**

An organization that conducts development tests or user tests.

**User test**

A generic term which encompasses testing which requires the use of user representative user troops and units for early user test and experimentation, force development test and experimentation, innovative tests, concept evaluation program tests, training effectiveness analysis tests, initial operational test and evaluation, follow-on operational test and evaluation, and joint user tests.

**Section III****Special Abbreviations and Terms**

This section contains no entries.

## **Index**

This index is organized alphabetically by topic and subtopic. Topics and subtopics are identified by paragraph number.

**Army Acquisition Executive, 4a, 5f, app B**

**Army Materiel Command, 4v**

**Army Systems Acquisition Review Council, 4a, 4m, 4n**

**Assistant Secretary of the Army for Research, Development and Acquisition, 4a, 4n**

**Chief of Engineers, 4h**

**Combat Developer, 4q(14), 4s, 4r(3)**

**Cost and Operational Effectiveness Analysis, 4s(4)**

**Director of Army Safety, 4m**

**Deputy Chief of Staff for Logistics, 4g**

**Deputy Chief of Staff for Operations and Plans, 4m**

**Deputy Chief of Staff for Personnel, 4d, 4n(3), 5n**

**Director of Information Systems for Command, Control, Communications and**

**Computers, 4c**

**Equipment Improvement Recommendation, 4q(13), 4r(2), 4x(2)**

**Field Operating Agency, 4r**

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